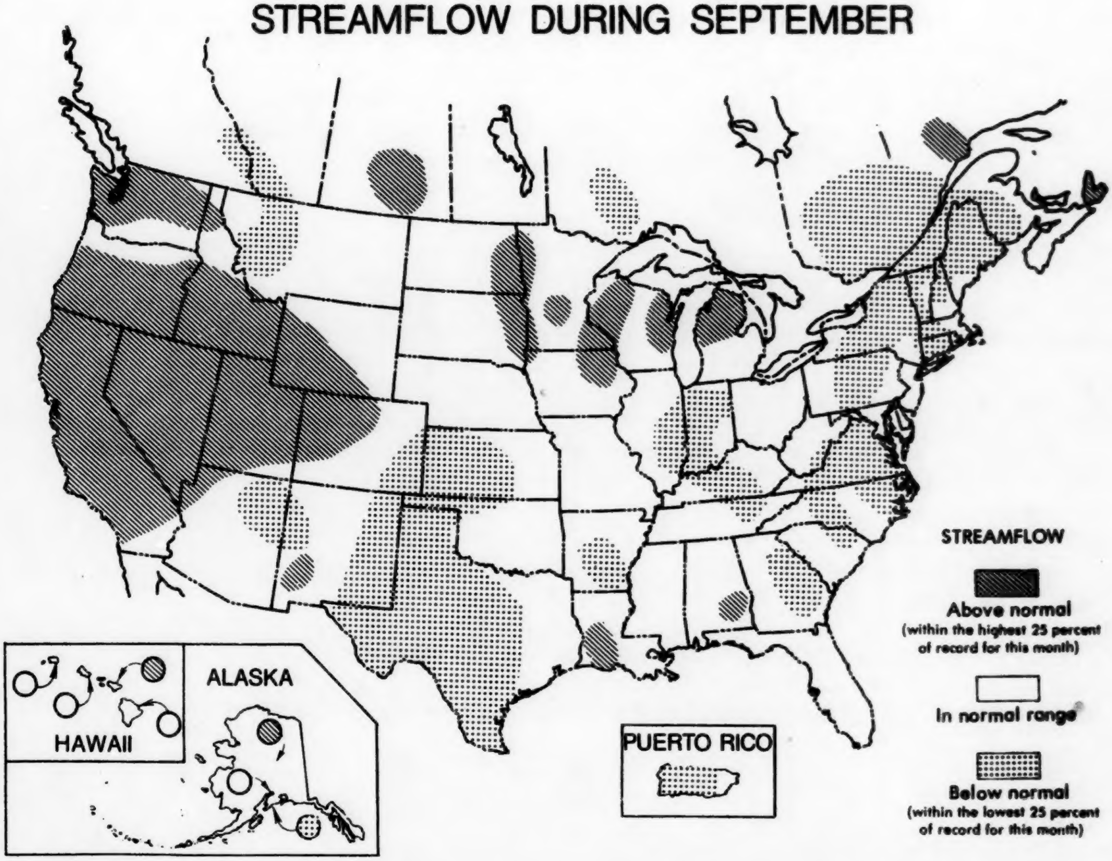
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

SEPTEMBER 1983

STREAMFLOW DURING SEPTEMBER



Streamflow remained in the above-normal range in parts of most western States and in smaller areas located in Louisiana, Saskatchewan, South Dakota, and Minnesota. Flows remained in the below-normal range in western Texas and parts of adjacent States, as well as in parts of Arkansas, Montana, and many eastern States. Monthly and/or daily mean flows were highest of record for September in parts of California, Nevada, and Utah, and lowest of record for the month in parts of Quebec, Kansas, Kentucky, and New York.

Contents of principal reservoirs generally decreased during September and were above long-term averages except in parts of Texas, Oklahoma, and several of the New England States.

STREAMFLOW CONDITIONS DURING SEPTEMBER 1983

Streamflow generally decreased seasonally in southwestern Canada, in Wyoming and adjacent States, in the Ohio River valley, and also in California, Delaware, Maryland, Mississippi, Nevada, Rhode Island, and Virginia. Mean flows increased in Massachusetts, Michigan, Ontario, and Wisconsin, and were variable elsewhere in the United States and in southeastern Canada.

Monthly mean flows remained in the above-normal range in parts of Nova Scotia, Saskatchewan, Louisiana, Minnesota, North Dakota, South Dakota, and all western States except New Mexico and Montana. Monthly and/or daily mean flows were highest of record for September in parts of California, Nevada, and Utah. (See table on page 3.) For example, in northeastern Utah, the monthly mean flow of 193 cubic feet per second (cfs) and the daily mean flow of 352 cfs on the 4th, in Weber River near Oakley (drainage area, 163 square miles) were highest for September in 69 years of record.

Below-normal streamflow persisted in parts of Quebec, Maine, Indiana, Arkansas, Texas, New Mexico, Kansas, Montana, Puerto Rico, and in parts of most southeastern States. Monthly mean flows were lowest of record in Quebec and parts of at least 3 States. (See table on page 3.) Where zero flows occurred at index stations in New Mexico, South Dakota, and Texas in July and August, flow had not resumed at end of September. Owing to the absence of tropical storms, September was the dryest month in 20 years in parts of Puerto Rico. Typical of the below-normal trend in streamflow in the Southeast was the flow of Altamaha River at Doctortown, Georgia, which continued to decrease seasonally and remained in the below-normal range for the 4th consecutive month. (See graph on page 3.)

Elsewhere in the Nation, streamflows increased sharply in the headwaters of the Cedar and Upper Iowa Rivers in northern Iowa as a result of runoff from intense rains. By contrast, low flow conditions continued in the southern part of the State. Similarly, low flows were reported in several streams in central and southeastern Indiana, not uncommon for late summer, although the duration of low flows was longer than normal. In eastern Virginia, tropical storm Dean dumped several inches of rain at the end of the month but major streams were not significantly affected. In North Carolina, flows in the Mecklenburg County area remained at the 2- to 5-year drought frequency level. Severe drought conditions continued in the 27-county area in far west Texas with little or no significant rain reported in the area in 1983. In Nebraska, month-end rains of up to 7.5 inches occurred in the lower Republican River basin and the Little Blue River basin and produced peak flows of 10,000 cfs at Republican River at Guide Rock and 20,000 cfs at Little Blue River near Fairbury. Recurrence interval for both flows was about 10 years.

Contents of principal reservoirs generally decreased during September but were generally above long-term averages except in parts of Texas, Oklahoma, and several of the New England States.

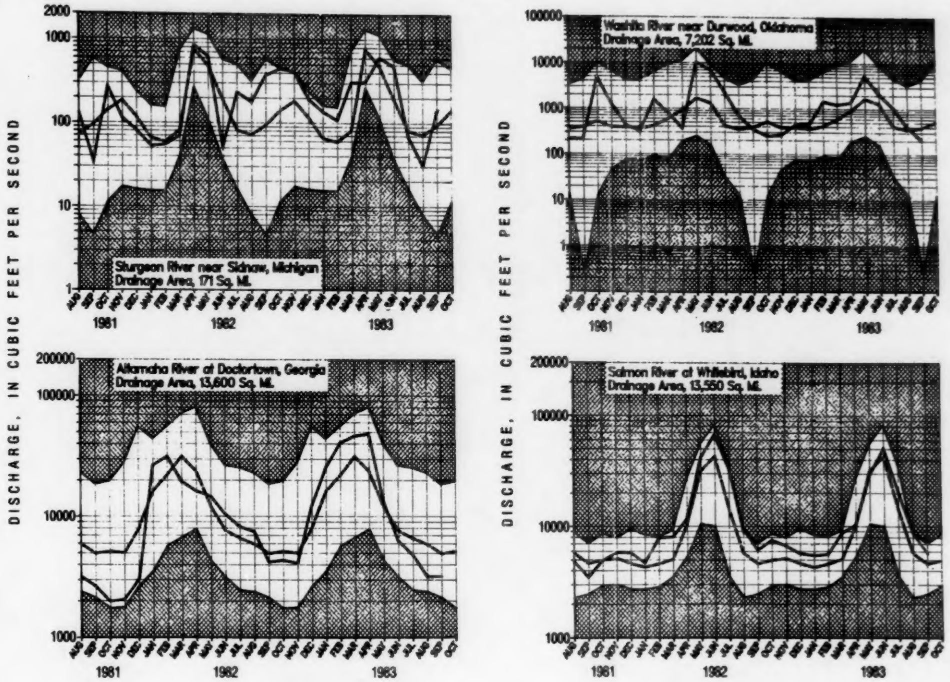
For the 1983 water year, annual mean flows were in the normal or above-normal range in most of the United States and southern Canada. Exceptions included most of Hawaii, western and central Texas, western Kansas, southern Nova Scotia, and parts of Indiana, Montana, Alberta, and British Columbia, where flows were in the below-normal range. Similarly, average flows for the 6-month period ending in September 1983 were also generally in the normal or above-normal range. (See maps on page 10.)

The declining trend in streamflow was again reflected in the combined flow of three large rivers—Mississippi, Columbia, and St. Lawrence—which averaged 620,500 cfs during September, 3 percent below average, and down 18 percent from August.

CONTENTS

SURFACE WATER – MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951–80. Heavy line indicates mean for current period.



Provisional data; subject to revision

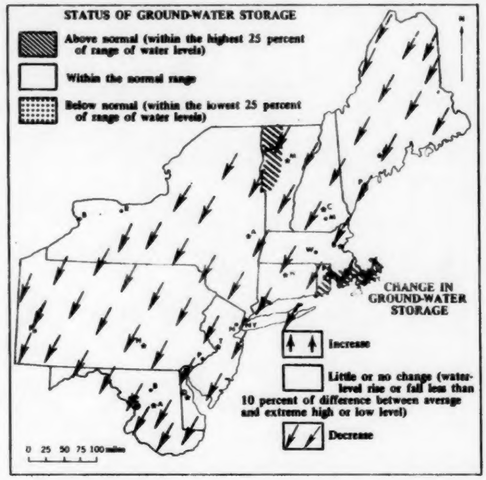
NEW EXTREMES DURING SEPTEMBER 1983 AT STREAMFLOW INDEX STATIONS

Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous September extremes (period of record): Monthly mean in cfs (year)	Previous September extremes (period of record): Daily mean in cfs (year)	September 1983: Monthly mean in cfs	September 1983: Percent of median	September 1983: Daily mean in cfs	September 1983: Day
	LOW FLOWS								
01318500	Hudson River at Hadley, New York.	1,664	62	655 (1964)	298 (1934)	643	59	373	10
03308500	Green River at Munfordville, Kentucky.	1,673	57	78.3 (1953)	42 (1919)	61.4	17	....	....
05011500	St. Maurice River at Grand Mere, Quebec, Canada.	16,200	83	5,500 (1950)	3,900 (1940)	3,240	17	....	....
06867000	Saline River near Russell, Kansas.	1,502	32	3.61 (1979)	0.16 (1976)	1.9	5	1.6	30
	HIGH FLOWS								
10128500	Weber River near Oakley, Utah . . .	163	69	161 (1909)	279 (1909)	193	264	352	4
10234500	Beaver River near Beaver, Utah . . .	91	70	41.8 (1980)	89 (1980)	63	304	86	2
10296000	West Walker River below Little Walker River, near Coleville, California.	180	45	166 (1978)	467 (1978)	244	401	558	1
10322500	Humboldt River at Palisade, Nevada.	5,010	76	110 (1965)	185 (1931)	110	412	209	30
11427000	North Fork American River at North Fork Dam, California.	342	42	79.8 (1963)	197 (1959)	106	207	189	2

GROUND-WATER CONDITIONS DURING SPETEMBER 1983

Ground-water levels continued to decline seasonally in most of the Northeast. (See map.) Levels rose or changed only slightly in east-central New York and in some northern border parts of New York, Vermont, New Hampshire, and Maine. Levels near the end of the month were near average or below average in most of the region. Local exceptions were above-average levels on Cape Cod, Massachusetts, and also in southern Rhode Island and along part of Vermont's western border.

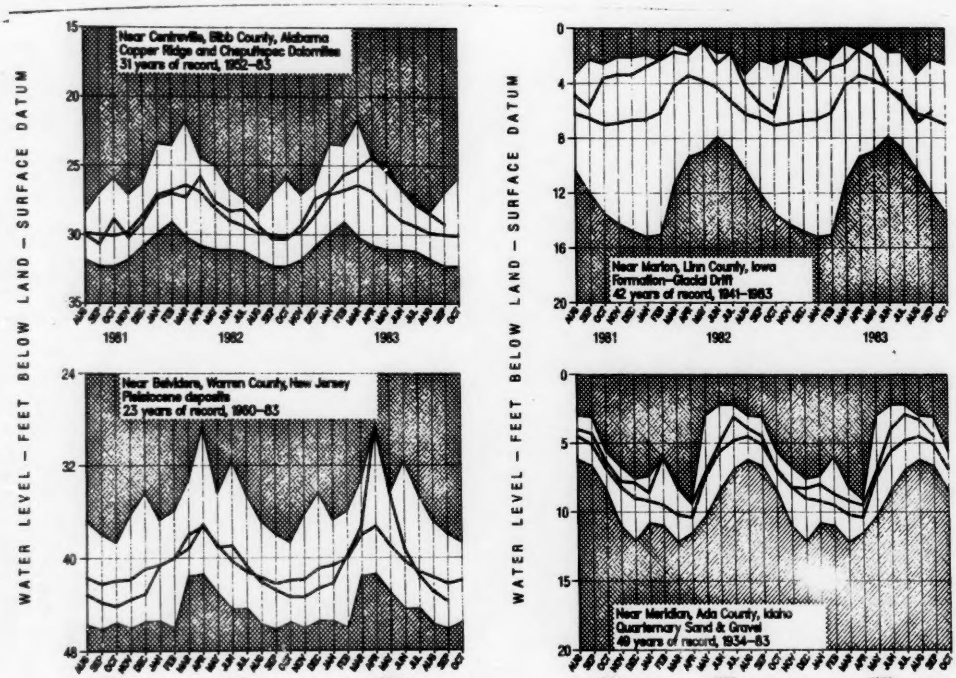
In the southeastern States, ground-water levels declined in West Virginia, Kentucky, Virginia, North Carolina, and Mississippi, and in most observation wells in Louisiana. Levels declined or held steady in Alabama, and showed mixed trends in Arkansas. In Georgia, levels rose or held steady in most wells except in the southwestern part of the State. Water levels were above average in Kentucky and Alabama, below average in Virginia and Arkansas, and were mixed with respect to average in West Virginia and North Carolina.



Map shows ground-water storage near end of September and change in ground-water storage from end of August to end of September.

MONTH-END GROUND-WATER LEVELS IN KEY WELLS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.



WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES—SEPTEMBER 1983

Aquifer and location	Current water level in feet below land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota	-10.73	-2.64	-3.15	-4.35	1943	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan	-4.43	-0.67	-0.58	+0.57	1935	
Glacial drift at Marion, Iowa	-6.01	+0.51	+0.81	-0.58	1941	
Glacial drift at Princeton in northwestern Illinois	-10.13	+3.62	+1.65	+0.89	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia	-17.07	-0.99	-0.43	-1.55	1939	
Glacial outwash sand and gravel, Louisville, Kentucky	-17.72	+7.98	-0.19	+0.80	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2)	-103.34	-14.40	-0.30	+0.68	1941	
Granite in eastern Piedmont Province, Chapel Hill, North Carolina	-40.70	+2.06	-1.02	+0.01	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas	-236.80	-30.44	-0.90	-6.60	1958	
Copper Ridge and Chepultepec Dolomites, Centreville, Alabama	-29.2	+0.8	-0.7	+1.1	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia	-24.50	-5.80	+0.75	-0.15	1956	
Sand and gravel in Puget Trough, Tacoma, Washington	-110.78	-2.65	-0.50	-5.30	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3)	-454.6	+4.0	+0.3	+3.0	1929	
Snake River Group: southwestern Snake River Plain aquifer, at Eden, Idaho	-121.9	-7.7	+0.9	+0.7	1957	
Terrace gravel at Missoula, Montana	-15.40	-1.99	-0.70	-0.10	1960	Sept. low.
Alluvial sand and gravel, Platte River Valley, Nebraska (U.S. well no. 6)	-6.02	+0.40	-0.93	-2.72	1935	
Alluvial valley fill in Steptoe Valley, Nevada	-10.72	+2.96	-0.07	-0.82	1950	Sept. high.
Ogallala Formation, Kansas Agricultural Experiment Station at Colby in the High Plains of northwestern Kansas	-127.57	-9.36	+0.53	-2.00	1947	Sept. low.
Alluvium and Paso Robles, clay, sand, and gravel, Santa Maria Valley, California	-123.81	+22.14	-0.67	+3.21	1957	
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15)	-112.0	-32.30	-0.3	+3.0	1951	
Berrendo-Smith well in San Andres Limestone, Roswell artesian basin of Pecos Valley, New Mexico (U.S. well no. 1-A)	-67.44	+0.18	+0.82	+0.18	1966	
Hueco bolson, El Paso area, Texas	-263.46	-16.45	-1.36	-2.70	1965	Alltime low.
Evangeline aquifer, Houston area, Texas	-319.74	-16.99	+0.68	+8.94	1965	

In the central and western Great Lakes States, water levels rose in Iowa but generally declined in Minnesota, Wisconsin, Michigan, and Ohio. Levels were above average in Iowa, average and below average in Ohio, and mixed with respect to average in Michigan.

Among the western States, levels rose in Utah and in most key wells in Idaho, New Mexico, and Texas. Levels showed mixed trends in Nebraska, and declined in most wells in Kansas and Arizona; levels declined in Washington, Montana, North Dakota, southern California, and Nevada. Levels were above average in Nebraska and southern California, and were mixed with respect to average in Washington, Idaho, North Dakota, Nevada, Utah, New Mexico, and Texas. Water levels declined in Montana, Kansas, and Arizona. Despite net declines during the month, new September high ground-water levels were recorded in southern California and Nevada. A new alltime high level was reached in the Logan area in northern Utah in 43 years of record. New low levels for September occurred in Montana, Nevada, Kansas, and Arizona, and a new alltime low level was reached in the western Salt River Valley observation well in Arizona in 16 years of record.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF SEPTEMBER 1983

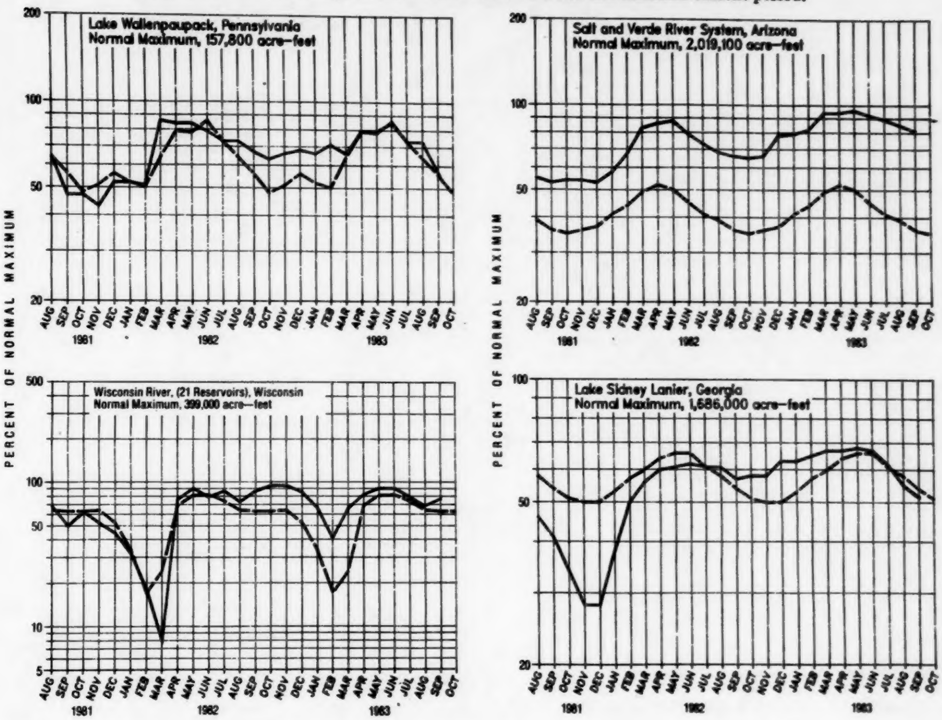
[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

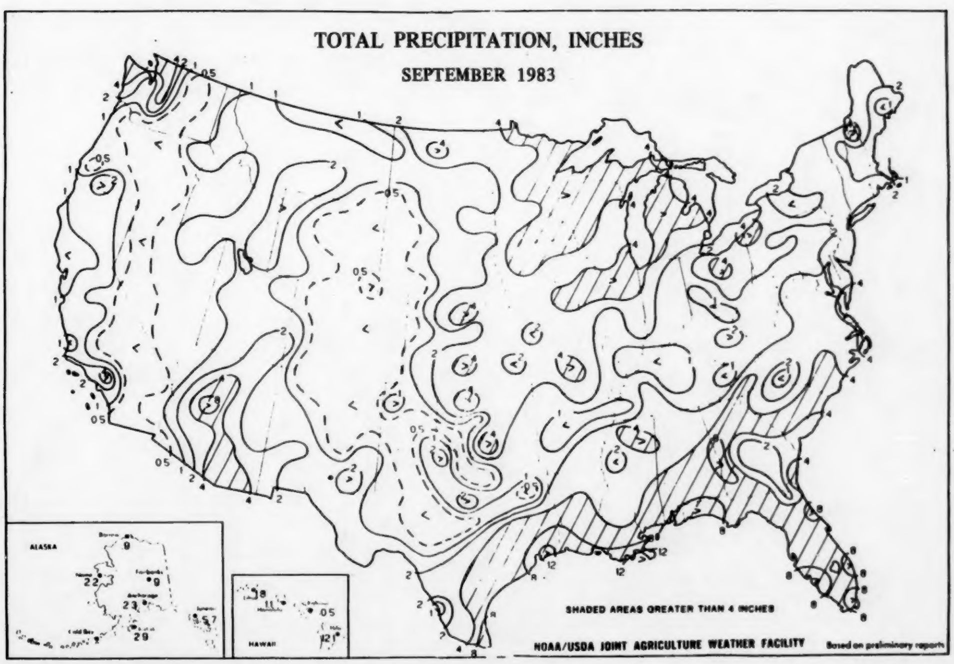
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Sept. 1983	End of Sept. 1982	Average for end of Sept.	End of Aug. 1983	
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	41	47	38	50	[b]226,300
QUEBEC					
Allard (P)	76	47	62	76	280,600
Gouin (P)	76	84	68	85	6,954,000
MAINE					
Seven reservoir systems (MP)	56	57	58	71	4,098,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	75	74	78	83	76,450
Lake Francis (FPR)	67	73	78	67	99,310
Lake Winnipesaukee (PR)	62	77	65	72	165,700
VERMONT					
Harriman (P)	67	67	64	75	116,200
Somerset (P)	48	65	71	56	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	65	80	74	71	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	61	57	62	74	786,700
Indian Lake (FMP)	84	84	59	88	103,300
New York City reservoir system (MW)	65	71	...	76	1,680,000
NEW JERSEY					
Wanaque (M)	68	81	68	78	85,100
PENNSYLVANIA					
Allegheny (FPR)	39	41	41	45	1,180,000
Pymatuning (FMR)	82	86	82	88	188,000
Raystown Lake (FR)	61	67	60	62	761,900
Lake Wallenpaupack (PR)	56	67	56	73	157,800
MARYLAND					
Baltimore municipal system (M)	84	73	86	91	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	91	92	83	91	288,800
Narrows (Badin Lake) (P)	77	92	98	88	128,900
High Rock Lake (P)	55	65	65	76	234,800
SOUTH CAROLINA					
Lake Murray (P)	77	85	67	78	1,614,000
Lakes Marion and Moultrie (P)	76	81	68	76	1,862,000
SOUTH CAROLINA--GEORGIA					
Clark Hill (FP)	70	74	57	72	1,730,000
GEORGIA					
Burton (PR)	91	97	79	90	104,000
Sinclair (MPR)	86	89	81	78	214,000
Lake Sidney Lanier (FMPR)	52	57	54	55	1,686,000
ALABAMA					
Lake Martin (P)	89	92	77	92	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	33	44	38	43	2,229,300
Douglas Lake (FPR)	29	34	33	40	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	63	64	59	70	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	22	55	46	52	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	51	62	58	60	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	85	84	74	78	365,000
Wisconsin River (21 reservoirs) (PR)	76	87	63	68	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	31	33	32	33	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	92	92	91	92	22,700,000
SOUTH DAKOTA					
Angostura (I)	71	81	73	77	127,600
Belle Fourche (I)	33	...	...	43	185,200
Lake Francis Case (FIP)	71	79	69	79	4,834,000
Lake Oahe (FIP)	92	85	...	94	22,530,000
Lake Sharpe (FIP)	99	99	100	100	1,725,000
Lewis and Clarke Lake (FIP)	92	94	97	91	477,000
NEBRASKA					
Lake McConaughy (IP)	81	74	66	88	1,948,000
OKLAHOMA					
Eufaula (FPR)	76	80	81	84	2,378,000
Keystone (FPR)	82	86	93	80	661,000
Tenkiller Ferry (FPR)	87	90	90	92	628,200
Lake Altus (FIMR)	28	55	46	45	133,000
Lake O'The Cherokees (FPR)	77	84	81	80	1,492,000
OKLAHOMA--TEXAS					
Lake Texoma (FMPRW)	84	92	91	88	2,722,000
TEXAS					
Bridgeport (IMW)	78	95	46	83	386,400
Canyon (FMR)	90	93	75	90	385,600
International Amistad (FIMPW)	73	90	85	75	3,497,000
International Falcon (FIMPW)	41	78	76	38	2,668,000
Livingston (IMW)	100	99	85	100	1,788,000
Possum Kingdom (IMPRW)	79	91	99	84	570,200
Red Bluff (PI)	10	14	24	11	307,000
Toledo Bend (P)	87	86	82	89	4,472,000
Twin Buttes (FIM)	21	39	32	24	177,800
Lake Kemp (IMW)	61	87	84	72	268,000
Lake Meredith (FWM)	46	48	41	48	796,900
Lake Travis (FIMPRW)	81	77	77	85	1,144,000
MONTANA					
Canyon Ferry (FIMPR)	91	88	86	90	2,043,000
Fort Peck (FPR)	87	86	88	88	18,910,000
Hungry Horse (FIPR)	90	100	92	99	3,451,000
WASHINGTON					
Ross (PR)	93	96	92	99	1,052,000
Franklin D. Roosevelt Lake (IP)	97	101	103	95	5,022,000
Lake Chelan (PR)	93	92	85	97	676,100
Lake Cushman (PR)	79	79	91	101	359,500
Lake Merwin (P)	100	99	93	106	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	62	67	48	73	1,235,000
Coeur d'Alene Lake (P)	85	79	64	97	238,500
Pend Oreille Lake (FP)	90	100	91	101	1,561,000
IDAHO--WYOMING					
Upper Snake River (8 reservoirs) (MP)	74	77	48	83	4,401,000
WYOMING					
Boysen (FIP)	91	100	84	96	802,000
Buffalo Bill (IP)	79	96	80	91	421,300
Keyhole (F)	26	28	45	27	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	67	50	43	80	3,056,000
COLORADO					
John Martin (FIR)	23	3	12	32	364,400
Taylor Park (IR)	77	81	60	94	106,200
Colorado–Big Thompson project (I)	85	59	58	89	722,600
COLORADO RIVER STORAGE PROJECT					
Lake Powell, Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	98	92	....	101	31,620,000
UTAH--IDAHO					
Bear Lake (IPR)	93	88	59	96	1,421,000
CALIFORNIA					
Folsom (FIP)	45	76	59	86	1,000,000
Hetch Hetchy (MP)	91	92	59	72	360,400
Isabella (FIR)	71	65	29	88	568,100
Pine Flat (FI)	87	72	39	94	1,001,000
Clair Engle Lake (Lewiston) (P)	89	87	73	95	2,438,000
Lake Almanor (P)	93	90	53	99	1,036,000
Lake Berryessa (FIMW)	91	90	77	99	1,600,000
Millerton Lake (FI)	75	69	36	100	503,200
Shasta Lake (FIPR)	83	80	66	87	4,377,000
CALIFORNIA--NEVADA					
Lake Tahoe (IPR)	88	90	54	84	744,600
NEVADA					
Rye Patch (I)	93	74	56	98	194,300
ARIZONA--NEVADA					
Lake Mead and Lake Mohave (FIMP)	97	87	72	100	27,970,000
ARIZONA					
San Carlos (IP)	51	8	14	54	1,073,000
Salt and Verde River system (IMPR)	81	66	37	85	2,019,100
NEW MEXICO					
Conchas (FIR)	73	73	83	79	330,100
Elephant Butte and Caballo (FIPR)	52	34	23	55	2,453,000

[a] 1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b] Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, AUGUST 1981 TO SEPTEMBER 1983

Dashed line indicates average of month-end contents. Solid line indicates current period.





(From Weekly Weather and Crop Bulletin published by National Weather Service and Department of Agriculture.)

FLOW OF LARGE RIVERS DURING SEPTEMBER 1983

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	September 1983					
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from previous month (percent)	Discharge near end of month		
							Cubic feet per second	Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,690	9,647	2,479	52	+12	5,300	3,430	25
01318500	Hudson River at Hadley, N.Y	1,664	2,909	643	59	-48	750	484	30
01357500	Mohawk River at Cohoes, N.Y	3,456	5,734	1,200	69	-14	1,000	600	30
01463500	Delaware River at Trenton, N.J	6,780	11,750	3,403	80	-14	2,760	1,783	30
01570500	Susquehanna River at Harrisburg, Pa	24,100	34,530	4,120	56	-30	4,380	2,830	28
01646500	Potomac River near Washington, D.C.	11,560	[1]11,490	2,060	75	-18	1,950	1,260	30
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	1,050	59	+9	700	450	30
02131000	Pee Dee River at Peedee, S.C	8,830	9,851	3,090	60	-2	2,890	1,867	30
02226000	Altamaha River at Doctortown, Ga	13,600	13,880	3,185	64	+0	3,940	2,546	30
02320500	Suwannee River at Branford, Fla	7,880	6,987	4,930	98	-21	5,320	3,438	30
02358000	Apalachicola River at Chattahoochee, Fla	17,200	22,570	13,300	113	-1	11,700	7,560	30
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala	15,400	23,300	4,094	106	+28	2,730	1,764	30
02489500	Pearl River near Bogalusa, La	6,630	9,768	3,129	138	-16	2,950	1,906	30
03049500	Allegheny River at Natrona, Pa	11,410	[1]19,480	4,143	103	-35	4,200	2,170	28
03085000	Monongahela River at Braddock, Pa.	7,337	[1]12,510	2,580	80	-5	2,000	1,300	28
03193000	Kanawha River at Kanawha Falls, W. Va	8,367	12,590	2,924	87	-6	3,930	2,540	26
03234500	Scioto River at Higby, Ohio	5,131	4,547	775	74	-15	665	429	30
03294500	Ohio River at Louisville, Ky[2]	91,170	116,000	19,310	83	-18	26,900	17,390	25
03377500	Wabash River at Mount Carmel, Ill	28,635	27,220	4,540	67	-25	4,080	2,636	29
03469000	French Broad River below Douglas Dam, Tenn.	4,543	6,798	2,298	81	-19	.....	.....	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis[2]	6,150	4,163	3,818	178	+84	5,225	3,370	24
04264331	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y[3]	299,000	242,700	277,500	170	+0	274,000	177,100	30
050115	St. Maurice River at Grand Mere, Quebec	16,300	25,150	3,240	17	-57	15,100	9,760	25
05082500	Red River of the North at Grand Forks, N. Dak	30,100	2,551	2,532	206	+14	2,210	1,428	26
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	12,700	121	+10	12,000	7,800	27
05330000	Minnesota River near Jordan, Minn.	16,200	3,402	1,783	188	-17	1,500	969	30
05331000	Mississippi River at St. Paul, Minn	36,800	[1]10,610	8,105	130	-16	8,000	5,200	30
05365500	Chippewa River at Chippewa Falls, Wis.	5,600	5,100	7,210	226	+98	5,500	3,550	30
05407000	Wisconsin River at Muscoda, Wis	10,300	8,617	7,559	130	+45	10,900	7,040	30
05446500	Rock River near Joslin, Ill	9,551	5,873	3,740	127	+19	3,900	2,520	30
05474500	Mississippi River at Keokuk, Iowa	119,000	62,620	57,300	132	+16	92,100	59,530	30
06214500	Yellowstone River at Billings, Mont	11,796	7,038	4,519	101	-29	5,030	3,250	27
06934500	Missouri River at Hermann, Mo	524,200	79,490	56,000	104	-12	54,000	34,900	27
07289000	Mississippi River at Vicksburg, Miss[4]	1,140,500	576,600	245,700	88	-26	213,000	137,700	23
07331000	Washita River near Dickson, Okla.	7,202	1,368	200	52	-50	162	104	27
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex	9,730	725	246	97	-47	220	142	30
09315000	Green River at Green River, Utah.	40,600	6,298	5,957	216	-38	6,000	3,800	30
11425500	Sacramento River at Verona, Calif	21,257	18,820	21,293	176	0	20,900	13,500	28
13269000	Snake River at Weiser, Idaho	69,200	18,050	14,800	111	+10	16,400	10,600	28
13317000	Salmon River at White Bird, Idaho	13,550	11,250	5,940	128	-34	5,420	3,503	28
13342500	Clearwater River at Spalding, Idaho	9,570	15,480	2,560	83	-45	10,800	6,980	29
14105700	Columbia River at The Dalles, Oreg[5]	237,000	193,100	97,300	101	-37	126,800	81,950	28
14191000	Willamette River at Salem, Oreg.	7,280	23,510	5,050	127	-10	12,400	8,010	28
15515500	Tanana River at Nenana, Alaska.	25,600	23,460	35,953	114	-41	26,300	17,000	30
8MF005	Fraser River at Hope, British Columbia	83,800	96,290	78,388	92	-36	60,030	38,800	29

[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

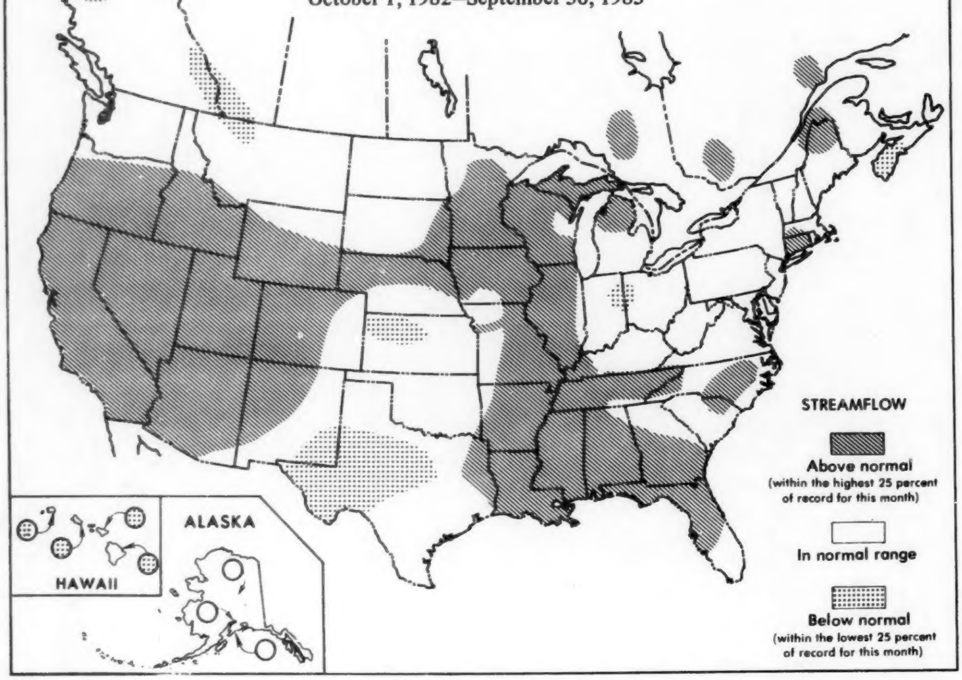
DISSOLVED SOLIDS AND WATER TEMPERATURES FOR SEPTEMBER 1983 AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	September data of following calendar years	Stream discharge during month	Dissolved-solids concentration during month[a]		Dissolved-solids discharge during month[a]			Water temperature during month[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean (tons per day)	Minimum (tons per day)	Maximum (tons per day)	Mean in°C	Mini-mum, in°C	Maxi-mum, in°C
	NORTHEAST										
01463500	Delaware River at	1983	3,405	106	133	1,117	850	1,642	23.0	17.5	27.5
	Trenton, N.J.	1945-82	5,485	63	149	.....	523	6,700	....	14.0	32.0
	(Morrisville, Pa.)	(Extreme yr)		(1977)	(1965)		(1966)	(1974)			
			[c]4,272								
04264331	St. Lawrence River at	1983	277,000	166	166	124,000	123,000	127,000	21.5	19.5	22.0
	Cornwall, Ontario, near	1976–82	286,800	164	175	129,000	119,000	142,000	19.0	15.0	22.5
	Massena, N.Y.	(Extreme yr)		(1980)	(1979)		(1982)	(1976)			
	median streamflow at		[c]259,400								
	Ogdensburg, N.Y.										
	SOUTHEAST										
07289000	Mississippi River at	1983	*245,700	.....	.....	.....	.....	.....	....	....	....
	Vicksburg, Miss.	1976–82	378,300	185	277	241,000	116,000	472,000	26.0	21.0	30.0
		(Extreme yr)		(1977)	(1981)		(1976)	(1979)			
			[c]281,700								
	WESTERN GREAT LAKES REGION										
03612500	Ohio River at lock and dam	1983	70,900	124	267	.....	20,800	65,600	....	24.5	30.0
	53, near Grand Chain, Ill.	1955–82	116,000	117	314	.....	9,190	304,000	.....	17.0	29.5
	(25 miles west of Paducah,	(Extreme yr)		(1965)	(1965)		(1961)	(1975)			
	Ky.; streamflow station		[c]89,720								
	at Metropolis, Ill.)										
	MIDCONTINENT										
06934500	Missouri River at Hermann,	1983	56,000	508	525	78,600	73,300	82,600	23.5	18.5	28.5
	Mo. (60 miles west of St.	1976–82	78,180	204	521	76,100	46,900	158,000	23.0	18.0	28.0
	Louis, Mo.)	(Extreme yr)		(1977)	(1980)		(1976)	(1982)			
			[c]54,090								
	WEST										
14128910	Columbia River at	1983	120,000	86	97	29,400	23,100	40,900	19.0	17.0	21.0
	Warrendale, Oreg.	1976–82	117,700	73	102	29,000	16,800	50,300	19.0	17.0	21.5
	(streamflow station	(Extreme yr)		(1976)	(1977,79)		(1981)	(1976)			
	at The Dalles, Oreg.)		[c]96,870								

[a]Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: $[(1.8 \times °C) + 32] = °F$.
[c]Median of monthly values for 30-year reference period, water years 1951–80, for comparison with data for current month.
*Dissolved-solids and water-temperature records are not available for September.

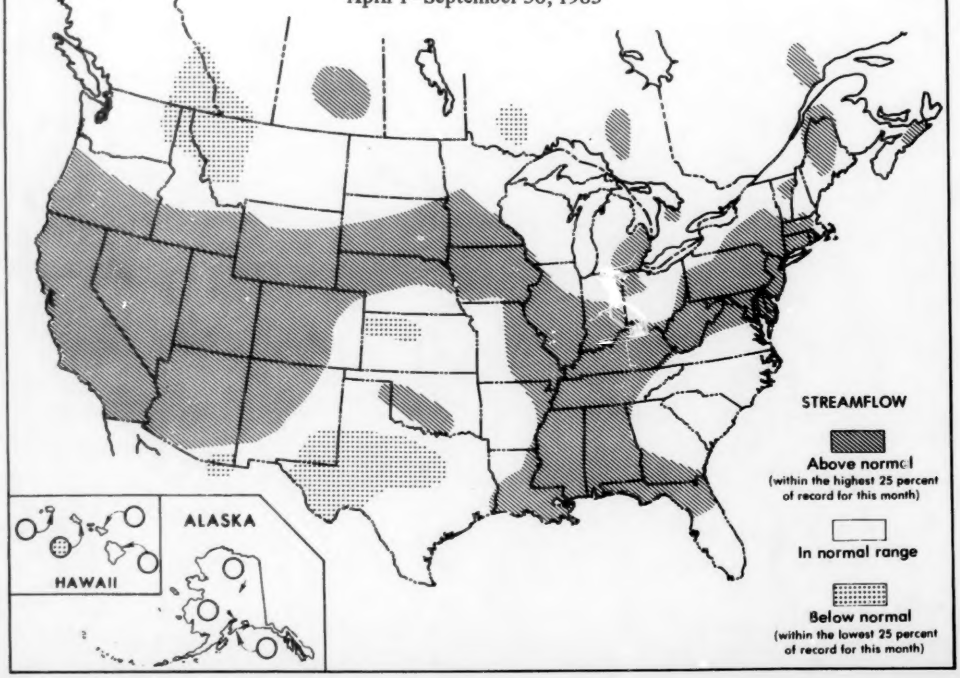
ANNUAL RUNOFF

October 1, 1982–September 30, 1983



SPRING–SUMMER RUNOFF

April 1–September 30, 1983



NATIONAL WATER CONDITIONS

September 1983

Based on reports from the Canadian and U.S. Field offices; completed October 12, 1983

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and 164 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the points shown by the arrows.

Streamflow for the current month is compared with flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile). Shorter reference periods are used for the Puerto Rico index stations because of the limited records available.

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows for each month of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for September are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

METRIC EQUIVALENTS OF UNITS USED IN THE NATIONAL WATER CONDITIONS

1 foot = 0.3048 meter

1 acre-foot = 1,233 cubic meters

1 million cubic feet = 28,320 cubic meters

1 cubic foot per second =
0.02832 cubic meters per second =
1.699 cubic meters per minute

1 cubic foot per second · day = 2,447 cubic meters

1 mile = 1.609 kilometers

1 square mile = 259 hectares = 2.59 square kilometers

1 million gallons = 3,785 cubic meters =
3.785 million liters

1 million gallons per day = 694.4 gallons per minute =
2.629 cubic meters per minute =
3,785 cubic meters per day

(Round-number conversions, to nearest four significant figures)

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